

Title (en)
UNIVERSAL CONTROL FOR IMPLEMENTING QUANTUM GATES

Title (de)
UNIVERSELLE STEUERUNG ZUR IMPLEMENTIERUNG VON QUANTENGATTERN

Title (fr)
COMMANDE UNIVERSELLE POUR IMPLÉMENTER DES PORTES QUANTIQUES

Publication
EP 3746954 B1 20230906 (EN)

Application
EP 18706023 A 20180131

Priority
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Abstract (en)
[origin: WO2019152019A1] Methods, systems, and apparatus for implementing a unitary quantum gate on one or more qubits. In one aspect, a method includes the actions designing a control pulse for the unitary quantum gate, comprising: defining a universal quantum control cost function, wherein the control cost function comprises a qubit leakage penalty term representing i) coherent qubit leakage, and ii) incoherent qubit leakage across all frequency components during a time dependent Hamiltonian evolution that realizes the unitary quantum gate; adjusting parameters of the time dependent Hamiltonian evolution to vary a control cost according to the control cost function such that leakage errors are reduced; generating the control pulse using the adjusted parameters; and applying the control pulse to the one or more qubits to implement the unitary quantum gate.

IPC 8 full level
G06N 10/40 (2022.01); **G06N 10/70** (2022.01)

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